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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/486,890	05/26/2000	RYOUMEI OMOTE	00177/530850	2420

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EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/486,890

Applicant(s)

OMOTE ET AL.

Examiner

Andrew T Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-22, 24, 25, 27-31, 33-37, 39, 41-44 and 46-55 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☒ Claim(s) 46, 48 and 50 is/are allowed.
- 6) ☒ Claim(s) 16, 19, 21, 28, 30, 33, 36, 42, 44, 52 and 54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims withdrawn from consideration are:
17,18,20,22,24,25,27,29,31,34,35,37,39,41,43,47,49,51,53 and 55.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 1/4/2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16, 19, 28, 30, 33, 36, 42, 44, 52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,225,273 to Mikoshiba et al. (hereinafter referred to as Mikoshiba) in view of USPN 4,448,637 to Hiraishi et al. (hereinafter referred to as Hiraishi) in view of Applicant's Disclosure in view of any one of USPN 6,284,393 to Hosokawa et al. (hereinafter referred to as Hosokawa) or USPN 4,847,625 to Dietrich et al. (hereinafter referred to as Dietrich).

Regarding claims 16, 19, 28, 30, 33, 36, 42, 44, 52 and 54, Mikoshiba discloses that it is known in the art of touch panels (column 1, lines 14-23) to form an ITO transparent conductive film by sputtering followed by heat aging performed at a temperature of between about 100 to

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about 250°C (column 9, line 32 through column 10, lines 64). Mikoshiba specifically teaches a heat aging temperature of 150°C in Examples 1-6 (see column 12, lines 43-44 and column 13, lines 55-56).

Examples 1-4 of applicant's specification clearly disclose that a sputter deposited transparent conductive ITO film heat aged at a temperature of about 150°C produces a film possessing a mean crystal size within the range of 40 to 100 nm, an arithmetic mean roughness (Ra) of $0.4 \text{ nm} \leq \text{Ra} \leq 2.3 \text{ nm}$, and a root-mean-square roughness (Rms) of 0.8 to 0.9 nm. In comparison, Comparative Examples 1-2 of applicant's specification clearly disclose that a transparent conductive ITO film that is sputter deposited in the same way as in Examples 1-4, except that the heat aging process is omitted, possesses a mean crystal size within the range of 10 to 20 nm, an arithmetic mean roughness (Ra) of $0.1 \text{ nm} \leq \text{Ra} \leq 0.25 \text{ nm}$, and a root-mean-square roughness (Rms) of 0.55 nm. Clearly, the heat aging step is directly related to the arithmetic mean roughness and the root-mean-square roughness.

Considering that the ITO transparent conductive film taught by Mikoshiba is formed by a substantially identical method (sputtering followed by heat aging at about 150°C) compared to the method disclosed by the current applicant in Examples 1-4, it appears that the transparent conductive film of Mikoshiba possesses the claimed arithmetic mean roughness and root-mean-square roughness.

Mikoshiba also discloses that the transparent conductive electrode may comprise crystal grain aggregates (see the paragraph bridging columns 3 and 4). Considering that the applicant discloses that the presence of crystal grain aggregates is responsible for the currently claimed arithmetic mean roughness and root-mean-square roughness (see page 19, line 23 through page

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20, line 7 of applicant's specification), it appears that the transparent conductive film of Mikoshiba possesses the claimed arithmetic mean roughness and root-mean-square roughness.

Mikoshiba does not mention the surface shape of the grain aggregates, but Hiraishi discloses that it is known in the touch panel art (column 1, lines 29-31) to etch the conductive film in any necessary pattern (column 1, lines 19-45). In fact, Hiraishi discloses that it is very seldom that the materials having surface conduction are used without an etching step (column 1, lines 38-40). In addition, Hosokawa and Dietrich disclose that it is known in the conductive film etching art to etch in a trapezoidal or rectangular pattern (see entire documents including column 14, lines 19-56 of Hosokawa and column 4, lines 15-41 of Dietrich). Absent a showing of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the etch pattern in any suitable shape, such as a trapezoid or rectangle, because it is within the general skill of a worker in the art to select a known design/shape on the basis of its suitability.

Regarding the claimed R_p/R_{max} parameter, applicant's specification discloses that the R_p/R_{max} parameter represents the surface shape of the transparent conductive film and that when the shape is formed into a trapezoidal or rectangular shape the R_p/R_{max} parameter is 0.55 or less (see page 20, lines 20-25). Considering that the prior art teaches a transparent conductive film that is shaped into a trapezoid or rectangle, it appears that the film inherently possesses the claimed R_p/R_{max} value.

Mikoshiba does not mention the a specific touch panel structure, but the current applicant discloses that a typical resistor-film analog type transparent touch panel has a lower electrode and an upper electrode stacked so as to be spaced from each other by spacers, the transparent

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conductive film being provided on an electrode substrate of at least one of the electrodes forming the electrode and thereby forming the electrode (see page 2, lines 11-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the touch panel structure disclosed by the current applicant, as the touch panel structure of Mikoshiba, because the touch panel structure disclosed by the current applicant is a typical resistor-film analog type transparent touch panel structure.

Regarding claims 28 and 30, considering the substantially identical ITO film of Mikoshiba, compared to the ITO film claimed by the current applicant, it is the examiner's position that the film of Mikoshiba is identical to or only slightly different than the claimed film prepared by the method of the claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show obvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Mikoshiba either anticipated or strongly suggested the claimed subject matter. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the Mikoshiba.

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4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mikoshiba in view of Hiraishi in view of Applicant's Disclosure in view of any one of Hosokawa or Dietrich as applied to claims 16, 19, 28, 30, 33, 36, 42, 44, 52 and 54 above, and further in view of USPN 5,411,792 to Yukinobu et al. (hereinafter referred to as Yukinobu).

Mikoshiba discloses the use of an ITO transparent conductive film, but does not mention the use of a fluorine or antimony doped tin oxide film. Yukinobu discloses that both ITO and antimony doped tin oxide layers (ATO) are used to form transparent electrodes for liquid crystal display panels (column 1, lines 6-22). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the transparent electrode of Mikoshiba from either ITO or ATO, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Allowable Subject Matter

5. Claims 46, 48 and 50 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to teach or suggest a method of fabricating a transparent conductive film for use in a transparent touch panel comprising coating or printing with a sol-gel material, performing a drying process, then an oxidation burning process at a temperature increasing rate of 40-60C per minute within a temperature range of 200-400C, followed by a reduction burning process.

Response to Arguments

7. Applicant's arguments have been considered but are moot in view of the new grounds of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atp

gtp 1/25/05
ANDREW T. PIZIALI
PATENT EXAMINER

Elizabeth M. Cole
ELIZABETH M. COLE
PRIMARY EXAMINER